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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,477	02/20/2001	Hiroki Kanai	520.39648X00	5481

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EXAMINER

CHACE, CHRISTIAN

ART UNIT	PAPER NUMBER
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2187

DATE MAILED: 02/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/785,477	KANAI ET AL.	
	Examiner	Art Unit	
	Christian P. Chace	2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claims 6, 8, 9, 11, 12, 13, 15, and 16 are objected to because of the following informalities: Improper idiomatic English with respect to claim dependency, as well as numerous other instances which will be addressed below, as they render the claims vague and indefinite. Also, examiner urges applicants to carefully review the claim language to add modifiers, as many appear to be missing. Appropriate correction is required.

Drawings

Figures 17 and 18 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. Specification pages 1 and 2, lines 15-16 and line 26, respectively, denote the instant figures noted supra as "conventional."

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "#3" has been used to designate both "configuration table" and "management table". A proposed drawing correction or corrected drawings are

required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Examiner notes that there are so many issues in these claims, that use of the formal paragraphs would be inefficient. Examiner will now address, claim by claim, the issues which render the instant claims vague and indefinite.

With respect to claim 1, in line 4, "each disk interface" is recited. There is no antecedent basis for this recitation. Also, "a disk controller," as well as, "one disk controller," are claimed. Are these the same disk controller?

With respect to claim 2, lines 6 and 7 recite, "...storing data at the destination of access every unit of access are stored every unit of access uniquely." This makes no sense.

With respect to claim 3, line 10 recites, "...after the exclusive operation of access data." This makes no sense. Lines 12-17 also do not make sense.

With respect to claim 4, lines 8-10 do not make sense.

With respect to claim 5, the claim language in lines 2 and 7, respectively refer to different claims for dependency, and renders the claim vague and indefinite for being a multiple dependent claim. Lines 3-4 recite, "A disk controller that receives a request for read access from a host computer determines whether access..." Examiner is unsure whether the host or the disk controller does the claimed determining. Line 12 recites "...at once." This is relative term of degree, and therefore vague and indefinite. Also, the claim recites two cases where, "...the data is/is not stored," presumably in the cache. Which cache? If not a cache, then where? Is there supposed to be a difference between which controller's cache has the data? If not, how can coherency be maintained?

With respect to claim 6, lines 3-4 do not make sense. Are applicants referring to a write-back cache? Lines 6-7 also do not make sense.

With respect to claim 7, lines 8-9 recite, "...data of the disk drive..." It is unclear whether this is manufacturer's data, or it caches the data stored in that drive, for example. Lines 14-15 do not make sense.

With respect to claim 8, it is dependent upon a previously rejected claim.

With respect to claim 9, the last two lines of the claim do not make sense, as caches do not multiplex data – multiplexers multiplex data.

With respect to claim 10, line 11 recites, "...a trouble." Would this be an error? Lines 13-14 do not make sense.

With respect to 11 and 12, they are dependent upon previously rejected claims.

With respect to claim 13, line 7 recites the term, "inside." This is relative term of degree. For example, inside what? Physically?

With respect to claims 14-16, they are dependent upon previously rejected claims and contain many of the errors discussed supra.

Examiner has tried to uncover all of the issues that render these claims vague and indefinite. However, there may be others. Examiner respectfully requests that as applicants amend the claims to moot the instant objections and rejections, that very careful attention is brought to bear on the claim language to eliminate any future objections or rejections.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Dewey et al (US Patent # 5,724,501).

Examiner notes that with so many vague and indefinite issues in the claim language, it is very difficult to apply prior art to that claim language. Examiner has interpreted applicants' claimed invention to be a duplication of parts of their admitted prior art with an extra connection between the disk control units, which is, of course, disclosed by Dewey et al. It appears that this is to increase efficiency in the case of a

fault in any of the system components, as well as to maintain coherency of all of the storage components. It is with this interpretation that the instant rejection is issued.

With respect to claims 1, 3, 4, 6, 7, 9, 10, 11, 12, and 13, a disk controller is disclosed in figures 6 and 7 as #401. A subsystem provided with plural disk controllers is shown in figure 7. Communication means between the disk controllers is shown as #426. Communications means between the disk drives are provided through interfaces #410, #412, and #414. The controllers are provided with cache memories #422, and control memories #424. The cache from one controller that receives an access request from a host computer can access and store data for the disk drive connected to the disk controller provided with the cache memory via the disk drive connected to another at least one disk controller via the disk interface via the communication means is all disclosed by Dewey et al in columns 11 and 12, and shown in figure 7.

With respect to claim 2, for control information stored in control memory, a cache directory for specifying a disk controller that stores data at the destination of access in its cache memory and a cache address are disclosed in the abstract.

With respect to claims 5, 8, 15, and 16, data coherency is disclosed by Dewey et al in the abstract. Metadata is control data which includes addresses (pointers) as claimed in the instant claims, as far as Examiner can tell.

With respect to claim 14, measuring the frequency of traffic on each channel and compensating to better balance the activity of each system component is better known as "load balancing." It is inherent when there are more than one channel.

Conclusion

Art Unit: 2187

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian P. Chace whose telephone number is 703.306.5903. The examiner can normally be reached on 9-4-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Do Yoo can be reached on 703.308.4908. The fax phone numbers for the organization where this application or proceeding is assigned are 703.305.3719 for regular communications and 703.305.3719 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.305.3900.

Christian P. Chace *CPC*
DY/cpc
January 29, 2003

Do Hyun Yoo
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